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ABSTRACT

This study is part of a series of three studies related to the incidence and effects of grade repetition on elementary school children. The focus of this study was to determine whether kindergarten teachers are able to make accurate predictions about their pupils' general academic and reading achievement when they reach Grade 3. In the 1970/71 school year, a rating form was distributed to all participating kindergarten teachers in 14 schools. The teachers were asked to rank order their pupils in terms of achievement and predict future progress for these same pupils on a five point scale. If pupils were seen as likely to repeat a year, teachers were asked to include the reasons for their failure. Follow up occurred in 10 of the schools. Of the original 947 pupils 42.1% were presently in grade 3, and 4.5% in grade 2 in the same school. The Word Knowledge and Math Computation Tests of the Metropolitan Achievement Test (Elementary Form G) and the North York Self Concept Inventory (Revised Form) were used to assess the performance level of these pupils. From the results of the report, which are given in extensive tables, it is concluded that kindergarten teachers can predict the subsequent performance of their pupils on a group basis with, however, a number of exceptions on an individual basis. A review of the literature and a discussion of implications of the study are also included. (MS)

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ACCURACY OF KINDERGARTEN TEACHERS' PREDICTIONS OF THEIR PUPILS' SUBSEQUENT PERFORMANCE

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THE BOARD OF EDUCATION FOR THE BOROUGH OF NORTH YORK

Background

Early in 1971, a Committee of Vice-Principals in the Western Area* initiated three studies related to the incidence and effects of grade repetition on elementary school children. Briefly, the first was designed to determine whether kindergarten teachers are able to make accurate predictions about their pupils' general academic and reading achievement when they reach Grade 3; the second was designed to determine whether children who repeat one or more years at the elementary level tend to have poorer self concepts than those whose progress is not retarded; and the third was designed to determine whether male students tend to repeat one or more grades in elementary school more often than female students; and whether students who repeat one or more such grades tend to be early entrants, i.e. born in October, November or December.

The results of the latter two studies were published earlier**. Copies are available from the Department of Educational Research Services or the Minkler Library. This report presents the findings of study one, and includes the research procedure, the analysis of the data and discussion.

Research Procedure for Study One

Late in the 1970/71 school year, a rating form (see Appendix A) was distributed to all participating kindergarten teachers in 14 elementary schools in the Western Area. The teachers were asked to rank order their pupils in terms of their achievement, and secondly, to predict the future progress of these same pupils on a five-point scale, i.e. from A (excellent) to E (fail). If pupils were predicted as being likely to repeat a year, teachers were asked to include the reasons for their failure.

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* The name of Area 1 was changed since the beginning of this study, and is now referred to as the Western Area.

** Wright, Erica. "An Examination of Incidence of Grade Repetition and its Effects on Area One Elementary School Children", Educational Research Services, Board of Education for the Borough of North York. May, 1971.

** Shapson, S., Crawford, Patricia, & Virgin, A.E. An Examination of the Relationship Between Grade Repetition and Self Concept. Educational Research Services, Board of Education for the Borough of North York, July, 1971.

Early in the 1973-74 academic term, computer print-outs of the Student Basic Data File, listing Grades 2 and 3 pupils, were collected for each of the 14 participating schools in order to determine the number of pupils who were initially involved in the study while they were in kindergarten, and who were presently attending the same school.

Originally, it was proposed that all these pupils would be tested for academic achievement to determine the accuracy of the kindergarten teachers' predictions of subsequent success. Four of the 14 participating schools, however, are involved in other major research projects, and it was decided that only those pupils in the 10 remaining schools would be tested. In addition, such testing would be limited to the Grade 3 pupils. It was decided that the Grade 2 pupils, by the nature of their having failed one grade level, were performing at the lower end of their original peer group.

Arrangements were made with the principals of each of the ten schools to test the participating Grade 3 pupils during late November and early December. Three teams of two testers each visited the schools to administer the tests. Testing sessions ran approximately one and a half hours and were broken half way through with a fifteen minute rest period. The tests were scored using hand-scoring stencils and raw scores submitted for appropriate analyses.

For the purposes of the present study, the Word Knowledge and Math Computation subtests of the Metropolitan Achievement Test (Elementary Form G), and the North York Self Concept Inventory (Revised Form) were used to assess the performance levels of the Grade 3 pupils.

RESULTS

Teacher Ratings

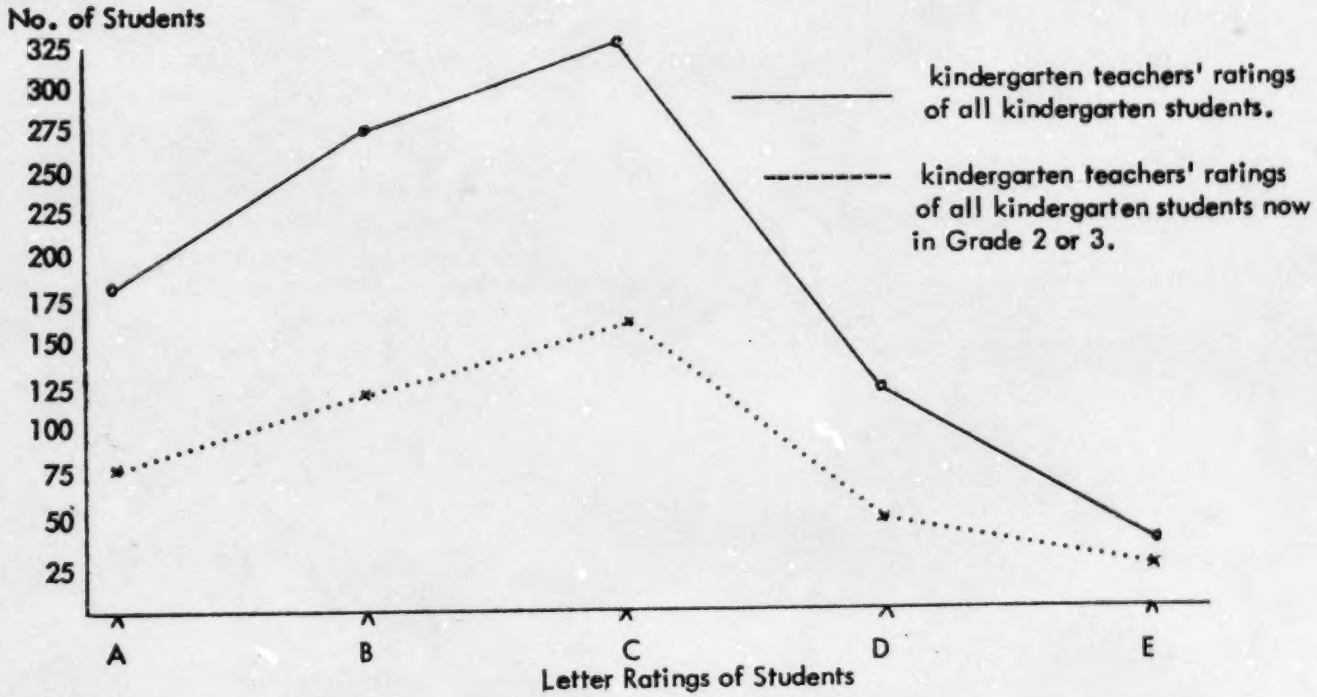
Kindergarten teachers in the ten schools returned rating forms for 947 pupils. Although teachers were initially asked to rank pupils along a five-point letter grade scale, from A to E, many teachers also included half point ratings (e.g. B-, C-D). For the requirements of statistical analyses, all ratings were collapsed along the original five-point scale, with half point grades tallied as the next higher full grade (e.g. D-was tallied as D; C+ as B).

Of the 947 kindergarten pupils originally in these schools, only 399 or 42.1 percent were found to be presently enrolled in the same school in Grade 3. An additional 43 pupils (4.5%) were registered in the same school in Grade 2.

The first analysis of the kindergarten teachers' ratings of the 442 pupils now in Grade 2 or 3 showed a predominance of pupils rated at C or better. It was feared that those pupils who had been rated D or E may have changed schools or school systems to a disproportionate degree as compared with the more highly rated pupils. The initial concern for any such disproportionate loss of low rated pupils was that the group of 442 pupils now in Grade 2 or 3 may not be statistically representative of the pupils who first began the study three years ago. If this were the case, it would be difficult to draw valid conclusions from the present study without costly tracing procedures.

In order to determine whether these 442 pupils were representative of their original group, a tally of the number of pupils rated at each letter grade was made for the total sample of 1362 pupils in the 14 schools originally in the study. The resulting analysis (see Figure 1) shows that the ratings of the pupils who are now enrolled in the ten schools involved in the follow-up shows the same frequency distribution as the ratings of the total number of pupils initially in the study. Thus we can conclude that our sample is representative of the original group.

FIGURE 1: Frequency distribution of teachers' ratings for 1,362 students in kindergarten and for the 634 students still in the same school in Grades 2 or 3.



Achievement and Self Concept

Of the 399 Grade 3 pupils, 353 or 88.1% were present and available for the test sessions. The distributions of raw scores obtained by these pupils on each of the three tests, word knowledge, math computations and self concept are shown in the following three figures.

FIGURE TWO: RAW SCORE FREQUENCY DISTRIBUTION ON WORD KNOWLEDGE SUBTEST OF METROPOLITAN ACHIEVEMENT TEST (ELEMENTARY FORM G)

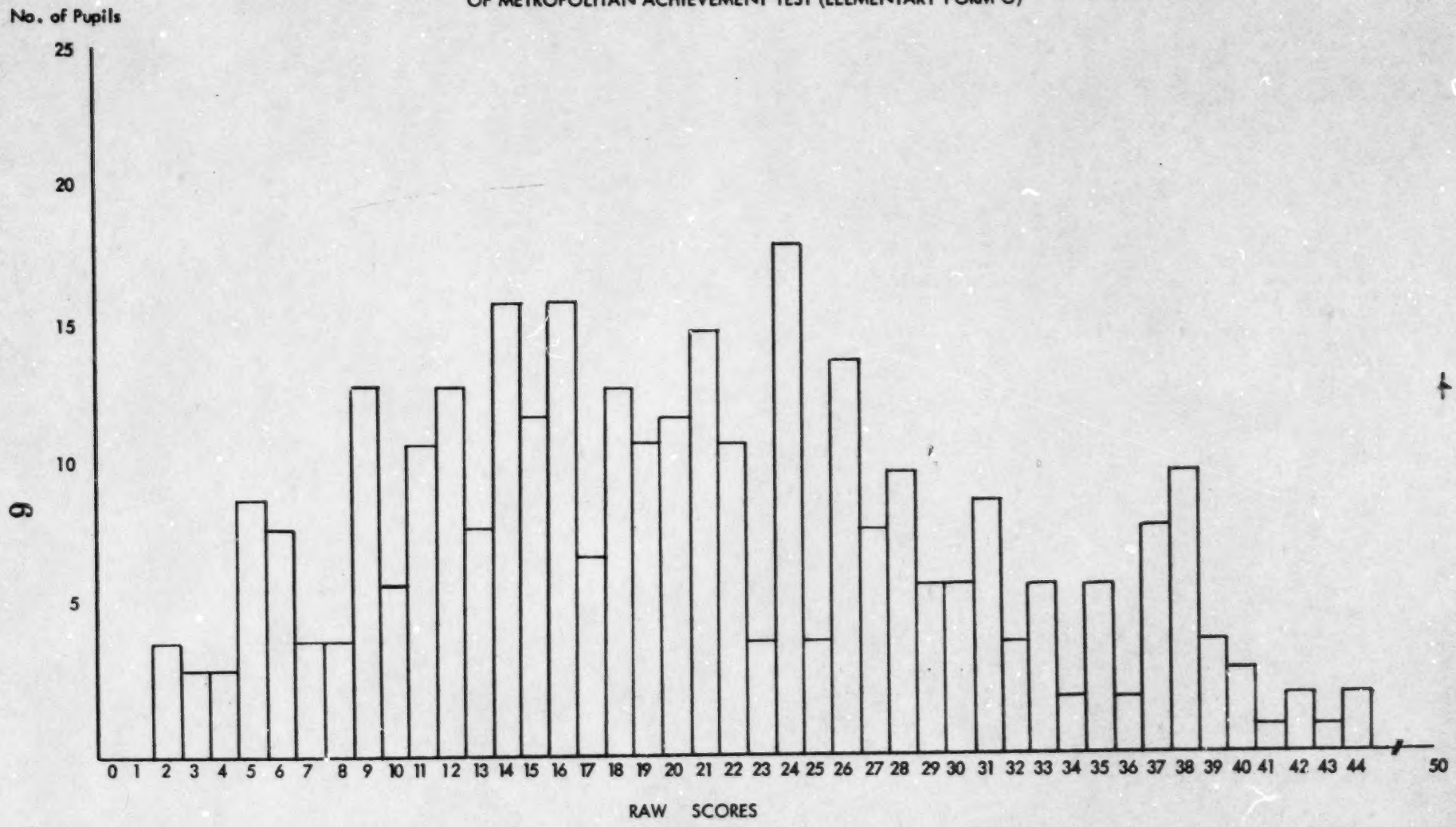


FIGURE THREE: RAW SCORE FREQUENCY DISTRIBUTION ON MATH COMPUTATIONS SUBTEST OF THE METROPOLITAN ACHIEVEMENT TEST (ELEMENTARY FORM G)

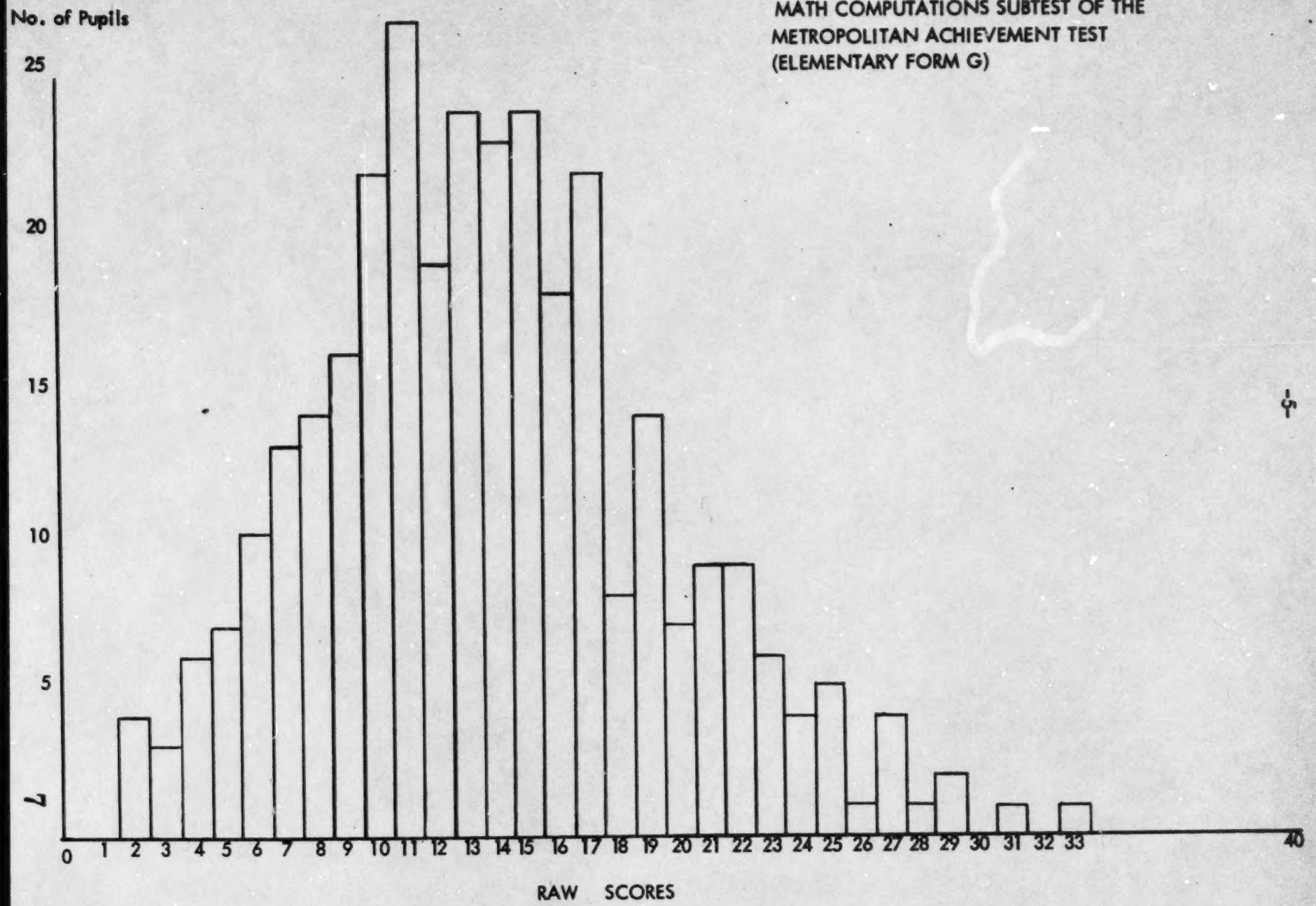
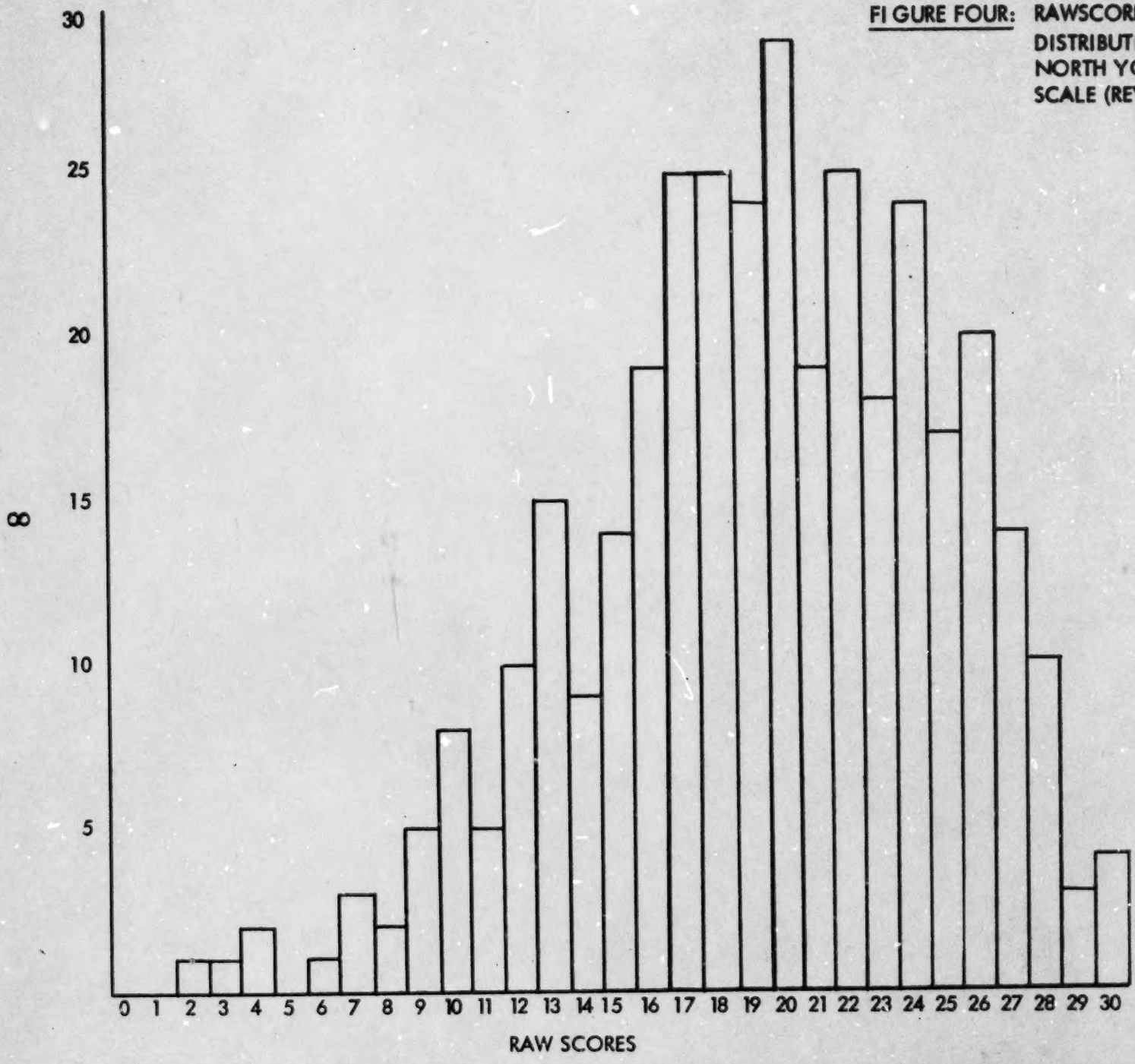


FIGURE FOUR: RAWSCORE FREQUENCY DISTRIBUTION ON THE NORTH YORK SELF CONCEPT SCALE (REVISED FORM)



Relationship Between Teacher Ratings and Achievement

In order to determine whether the scores obtained on the achievement and self concept measures were anticipated by the kindergarten teachers, the raw scores for each of the three tests and the teacher ratings were analyzed using the chi square statistic*. The first step in this analysis was to divide the raw scores into categories by inspection of the frequency distribution. Table 1 summarizes the range of scores for each of the three tests and the number of pupils falling in each of these categories.

TABLE 1

RANGE OF SCORES FOR GRADE 3
ACHIEVEMENT AND SELF CONCEPT MEASURES

TEST	Range Of Raw Scores	Number Of Pupils	Assigned Standing
Word Knowledge	37 - 44	29	1 High
	29 - 36	45	2 Medium High
	14 - 28	181	3 Average
	8 - 13	62	4 Medium Low
	0 - 7	36	5 Low
Math Computation	23 - 40	26	1 High
	18 - 22	48	2 Medium High
	9 - 17	217	3 Average
	5 - 8	48	4 Medium Low
	0 - 4	14	5 Low
Self Concept	28 - 30	18	1 High
	25 - 27	52	2 Medium High
	16 - 24	208	3 Average
	12 - 15	49	4 Medium Low
	1 - 11	26	5 Low

*Chi square is a statistical technique for comparing an observed number of responses falling in each given category with an expected number based on a chance distribution. If the observed responses differ substantially from the expected responses, the differences cannot be attributed to chance, and the chi square will be significant.

Having established the categories, it was then possible to construct chi square distribution tables identifying the frequency of scores obtained by the pupils, as a function of the rating predicted by their kindergarten teachers (see Tables 2, 3 and 4). These tables contain a number of cells identified by a column designation, which is the standing pupils achieved on the specific tests; and a row designation, which is the prediction rating kindergarten teachers made for the pupils. For example, the cell under column one and along row one, for Table 2 shows that of the 79 pupils who were given the highest teacher rating, 17 actually achieved very high scores on the Word Knowledge subtest.

It should be noted that to the assigned raw score categories in Tables 2 and 3, a sixth category has been added. This category is comprised of the 43 pupils who had failed one year since kindergarten and who are now in Grade 2. They have been placed sixth since they are considered to be performing academically below the Grade 3 students. This sixth category was not added to the self concept data in Table however, since it was decided that having failed a grade does not necessarily infer a poorer self concept. Thus, for the variable self concept, analysis has been confined to the 353 Grade 3 pupils.

TABLE 2

CHI SQUARE DISTRIBUTION FOR WORD KNOWLEDGE SUBTEST
BY TEACHER PREDICTION RATINGS

		Achievement Categories — Grade 3					Grade 2	
		1 (High)	2	3	4	5 (Low)	6 (Failed)	TOTALS
TEACHER RATINGS	1 (High)	17	18	33	9	2	0	79
	2	8	10	63	17	12	3	113
	3	4	14	65	21	15	17	136
	4	0	2	7	2	1	0	12
	5	0	1	10	11	5	17	44
	6 (Low)	0	0	3	2	1	6	12
TOTALS		29	45	181	62	36	43	396

TABLE 3

CHI SQUARE DISTRIBUTION FOR MATH COMPUTATIONS SUBTEST
BY TEACHER PREDICTION RATINGS

TEACHER RATINGS	Achievement Grade Categories 1 (High)	2	3	4	5	Grade 2 6 (Failed)	TOTALS
1 (High)	14	13	46	6	0	0	79
2	7	16	66	14	7	3	113
3	5	14	78	19	3	17	136
4	0	3	7	1	1	0	12
5	0	2	16	6	3	17	44
6 (Low)	0	0	4	2	0	6	12
TOTALS	26	48	217	48	14	43	396

TABLE 4

CHI SQUARE DISTRIBUTION FOR SELF CONCEPT
BY TEACHER PREDICTION RATINGS

TEACHER RATINGS	Self Concept Categories: Grade 3 — 1 (High)	2	3	4	5 (Low)	TOTALS
1	9	19	45	3	3	79
2	4	16	67	15	8	110
3	4	12	69	23	11	119
4	0	2	5	3	2	12
5	1	3	19	2	2	27
6 (Low)	0	0	3	3	0	6
TOTALS	18	52	208	49	26	353

The next procedure in the chi square analysis was to determine whether the actual distributions shown in the above tables were significantly different from distributions one would expect by chance. If they did differ to a large enough degree, this could indicate that teachers have predicted accurately. Cells which have fewer than 5 pupils, however, contribute to a disproportionately large difference between them and the chance frequency of pupils in these cells. This could lead to an erroneous judgment that the observed distribution is significantly different from one occurring by chance. To compensate for the number of cells which show zeroes, it was necessary to collapse several of the categories together. The resulting revised distributions are presented in Tables 5, 6 and 7.

TABLE 5

REVISED CHI SQUARE DISTRIBUTIONS FOR WORD KNOWLEDGE SCORES BY TEACHER PREDICTION RATINGS

TEACHER PREDICTION RATINGS	Achievement Categories 1	2	3	4	5	TOTALS
1	17 (5.8)	18 (9.0)	33 (36.1)	9 (12.4)	2 (15.8)	79
2	8 (8.3)	10 (12.8)	63 (51.6)	17 (17.7)	15 (22.5)	113
3	4 (10.0)	14 (15.5)	65 (62.2)	21 (21.3)	32 (27.1)	136
4	0 (5.0)	3 (7.8)	20 (31.1)	15 (10.7)	30 (13.6)	68
TOTALS	29	45	181	62	79	396

TABLE 6

REVISED CHI SQUARE DISTRIBUTIONS FOR MATH COMPUTATIONS SCORES BY TEACHER PREDICTION RATINGS

TEACHER PREDICTION RATINGS	Achievement Categories 1	2	3	4	5	TOTALS
1	14 (5.2)	13 (9.6)	46 (43.3)	6 (9.6)	0 (11.4)	79
2	7 (7.4)	16 (16.3)	66 (61.9)	14 (13.7)	10 (16.3)	113
3	5 (9.0)	14 (19.6)	78 (74.5)	19 (16.5)	20 (19.6)	136
4	0 (4.5)	5 (4.8)	27 (37.3)	9 (8.3)	27 (9.8)	68
TOTALS	26	48	217	48	57	396

TABLE 7

REVISED CHI SQUARE DISTRIBUTIONS FOR SELF CONCEPT SCORES BY TEACHER PREDICTION RATINGS

TEACHER PREDICTION RATINGS	Self Concept Categories 1	2	3	4	5	TOTALS
1	9 (4.0)	19 (11.6)	45 (46.5)	3 (11.0)	3 (5.8)	79
2	4 (5.6)	16 (16.2)	67 (64.8)	15 (15.3)	8 (8.1)	110
3	4 (6.1)	12 (17.5)	69 (70.1)	23 (16.5)	11 (8.8)	119
4	1 (2.3)	5 (6.7)	27 (36.5)	8 (6.3)	4 (3.3)	45
TOTALS	18	52	208	49	26	353

Included in these tables, in parentheses, are the frequencies for each cell that would be expected to occur if chance alone was present. An inspection of these tables show a consistent pattern! Let us look at Table 6, for example. The actual number of pupils who received a high teacher rating and whose math score fell in the top two achievement categories was 27, while by chance, one would expect only 15 pupils to have scores in these categories. On the other hand, 36 pupils who received the lowest teacher rating obtained math scores in the bottom two achievement categories, while by chance one would expect only 18 pupils.

The chi square statistics (X^2) provides an indication of how different these observed and chance distributions are. Table 8 shows the chi square value obtained for each of the three measures and the level of statistical significance.

TABLE 8

SUMMARY OF X^2 FOR TEST BATTERY
AND LEVEL OF SIGNIFICANCE

Test	X^2	$P(<)$
Word Knowledge	85.15	.001
Math Computation	75.54	.001
Self Concept	28.47	.01

The statistical significance of the differences between the actual and chance distributions is determined by the probability levels included in Table 8. They indicate that the probability that the actual distribution of scores would occur by chance is less than one in a thousand for the academic tests, and less than one in a hundred for the self concept test. It is not surprising that relationship between teacher ratings and the self concept scores is not as strong, as teachers were being asked to predict only academic achievement.

Included below (Table 9) is a table summarizing the means and standard deviations of the four teacher rated groups for each of the three tests. An informal analysis of the means for both the Word Knowledge and Math Computation subtests shows that by groups, the earned mean scores do in fact match the teachers' predictions for these students. That is, the students predicted to do best (group 1), earned the highest mean scores, while those predicted to do poorly, earned the lowest mean scores. This pattern is also found with the mean scores on the self concept form, but is not as striking.

TABLE 9

MEANS AND STANDARD DEVIATIONS OF TEACHER RATED GROUPS FOR MAT ACHIEVEMENT TESTS AND SELF CONCEPT FORM

Groups by Teacher Rating	MAT Word Know.		MAT Math. Comp.		Self Concept	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
1 (High)	25.8	10.5	16.4	6.1	22.1	4.8
2	20.2	9.8	13.2	5.8	19.1	5.3
3	18.2	9.0	12.9	4.9	18.2	5.6
4 (Low)	15.3	7.4	11.1	4.9	18.1	4.9

Conclusions

While we can conclude that kindergarten teachers can predict the subsequent academic performance of their pupils, it is important to realize the meaning of this statement. Let us consider the 79 pupils whom kindergarten teachers rated in the top category and examine their current achievement levels. If teachers could not predict their pupil's future achievement at all, then one would expect the distribution of pupils across the five achievement categories to be determined by chance alone, i.e. on the word knowledge subtest (see Table 5), only 15 of the 79 pupils would achieve scores in the top two categories. However, in actual fact, 35 of the 79 pupils fell into these two categories. It must also be noted however, that two of the 79 pupils scored in the very lowest achievement category, nine were in the lower middle category and 33 were performing at an average level.

Let us also examine the 68 pupils whom teacher predicted would be performing at the lowest level by Grade 3. Forty-five or 66% did in fact obtain word knowledge scores which fall in the bottom two achievement categories. By chance, one would expect only 23 pupils to fall in these categories. However, twenty pupils are achieving at an average level and three at an above average level.

Therefore, while the results are reasonable when considered on a group basis, on an individual basis there are many exceptions.

REVIEW OF LITERATURE *

Before we discuss the implications of these results for North York schools, there is value in briefly examining the research literature on factors which affect school success.

Recent research has attempted to examine factors both within and without the school system which may affect the success of students. It has also looked at some of the philosophical rationalizations for either the maintenance of traditional modes of education or the introduction of innovative programs and methods of teaching which would provide for the best possible opportunity for each individual. Essentially the central question being asked is how can schools predict and then provide appropriate programs to ensure success.

Within schools, a wide range of studies have been based on such variants as predictions by kindergarten teachers of academic and social success to predictions of success at the college level based on actual academic performance in high school. There is a relatively high degree of accuracy in the prediction of academic success although causative factors are not so readily determinable and research is relatively new in techniques for improving chances of academic success to those students identified as in need of help.

One of the most comprehensive analyses of research on factors affecting student success was prepared by the Rand Corporation for the President's Commission on School Finance. It was published in March 1972 under the title, How Effective is Schooling? The authors (Averch et al) organized their analysis according to basic research approaches used, e.g. the aspect of education studied, the question being asked and the methods appropriate to answer that question. Four of the five categories of research they identified provide a useful framework for an examination of research with some relevance to this study.

Input-Output Approach

This body of studies is characterized by a view of the educational process that believes a student's educational achievement is determined by the quantitities of resources his school makes available to him; by the personal, family and community

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* The sources on which the Review of Literature is based may be found in the Bibliography.

characteristics that influence his learning - typically grouped under the term 'background factors' - and by the influences of his peers. In this approach the school in which the student is enrolled affects his success only to the extent that it serves as the channel through which resources flow to him. The structure and organization of the school and classroom are not scrutinized.

Student outcomes are most often assessed in terms of cognitive achievement measured by scores on standardized reading or mathematics achievement tests.

School resources studied usually include measures of the quality of teachers (teachers' experience, salary, degree level and verbal ability are the four most common factors investigated). Average class size or student-teacher ratios are frequently included as are measures of the physical plant or facilities of the school, age of the school buildings and the number of library books per student.

Background factors include measures of the socioeconomic status of families (parental income, education and occupation) or of the communities the schools serve, and whether a community is urban, rural or has a high proportion of ethnic population.

Peer group influences include measures of educational attainment and aspirations, the attitudes and motivations of a student's classmates. The percent of his class that intend to enter college, family ownership of academic resources such as encyclopedias, the attendance and transfer rates of classmates are typical measures of a peer group's influence on a student.

These studies provide very little evidence that school resources have a powerful impact upon student success. When the results across studies are examined, it is found that school resources are not consistently important. The particular resources that seem to be significant in one study do not prove to be significant in other studies that include the same resources in the analysis.

Background factors, on the other hand, are always important. In study after study a student's background has a strong influence on his educational outcomes. The socioeconomic status of a pupil's family - his parents' income, education and occupation - invariably prove to be significant predictors of his educational success.

The role of peer-group influences is more complex. There is good reason to believe that these variables are, in reality, measures of a student's background or of his school district's selection and assignment policies. On balance, there is little evidence that student's classmates exercise a strong, independent influence on his educational outcomes.

These studies have had an important influence on policy making particularly in the U.S. and a number of major, albeit controversial, studies such as the Equality of Educational Opportunity survey (Coleman et al, 1966) and more recently, Inequality: A Reassessment of the Effect of Family and Schooling in America (Jencks, 1973) have posed the question as to whether the school can really affect the ultimate success of children.

Jencks argues that schools "serve primarily as selection and certification agencies whose job is to measure and label people and only secondarily as socialization agencies whose job is to change people". Schools cannot control the factors that most determine test scores - heredity and home environment. "The character of a school's output depends largely on a single input, namely the characteristics of its entering children. Everything else - the school budget, its policies, the characteristics of the teachers - is either secondary or completely irrelevant". Jencks, like Coleman, concludes that it's what the children themselves bring into the school and not what the schools do for them that primarily determines their academic achievement. He found little correlation between cognitive skills and job success as measured by income. Only about 25 percent of the difference in earning power between high and low income people can be attributed to genetics, education, cognitive skill, home life or I.Q. and he speculates that the rest depends on luck and personality. But even Jencks concedes that schools are still important because "without them few children would learn to read and virtually nobody would learn algebra".

On the other hand, Averch et al caution that the lack of more positive results from these studies should not be interpreted to mean that school resources fail to affect student outcomes. They simply state that so far these studies have failed to show that school resources do affect student achievement.

Process Approach

This grouping of studies employs a psychological approach. Resources are taken as given or predetermined and what matters are the processes applied to students and the interactions between teachers and students. For example, research may concentrate on the relation between teaching style and student achievement on the effects of grouping on achievement. Averch et al believe there is a distinction to be made between results from classroom research and laboratory research.

Classroom studies show that:

1. The research on teaching approaches, teacher differences, class size and the like shows no consistent effect on student achievement as measured by standardized cognitive tests.

2. Work on instructional methods suggests no difference among methods; none currently appears better than conventional methods. That is, in terms of differences in achievement, conventional methods appear as effective as for example, teaching by television, although the latter enables one to reach far greater numbers of students.

The results from laboratory studies offer some interesting and important observations.

1. Work on the presentation of material suggests that it is not so much the medium of instruction that is important as its sequencing and organization. There seem to be interaction effects; individual methods of presentation appear superior for some tasks and some students, but it is still hard to match student characteristics, tasks and types of instruction.

2. The work on concept attainment, retention and learning rewards provides a number of positive findings, but the tasks in the laboratory are so unlike classroom learning that there is a difficult problem of translation. For example, the more meaningful the material, the faster it is learned and the more it is retained. But the definition of 'meaningful' is a laboratory one, relating, say to the difference between nonsense sentences or syllables and those that make sense.

3. What are termed interaction effects seem to exist among various types of personality, methods of reward, ability to grasp meaningful material, and so on; but these interactions have not yet been studied in detail.

Evaluation Approach

This approach to educational research consists of ex post analyses of comprehensive interventions in existing school systems. These studies are characterized by a macroview of educational interventions in which treatments are devoted to groups of children in diverse programs taken as a whole. In short, these studies ask whether large scale interventions have had an effect in general, rather than what has been the effect of any particular intervention.

Virtually without exception all the surveys of large, national compensatory education programs have shown no beneficial results on the average. However, the evaluations on which the survey reports are often based upon suspect research designs.

Two or three smaller surveys show modest positive effects of compensatory education programs in the short run. And a number of quite carefully designed

interventions display gains in pupil cognitive performance - again, in the short run. In particular, pupils from disadvantaged socioeconomic background tend to show greater progress in more highly structured programs. However, there is considerable evidence that many of the interventions fade away after two or three years if they are not reinforced. Also, this 'fade-out' is much greater for the more highly structured programs, which are most unlike regular public school practice.

Experiential Approach

This approach is represented by the literature of educational reform. The observer, either as researcher or participant, describes the way that the experience of schooling affects the student in relation to himself, his peers, authority and social institutions. The measure, for these writers is not educational outcomes as indicated by standardized tests but rather the effect of the school experience on people's lives, where cognitive testing measures nothing.

Because this literature is one of social reform it is not subject to the same tests of internal consistency as the approaches discussed above. In effect there are two elements in this literature - description and prescription. The description of the schools as constituted at the present time almost invariably emphasizes a set of common themes:

1. Schools are authoritarian toward students.
2. Schools make little or no allowance for individual differences in learning styles and needs.
3. Schools focus on methods that stress rightness and wrongness in learning thereby destroying independence and creativity as well as equipping children poorly for the complexities and ambiguities of the real world.
4. Schools impose a certain set of social, cultural and ethical views on their students, thereby imposing feelings of inadequacy and resentment on those who share neither those views nor the traditions they imply.
5. Schools as institutions are mindless in the sense that they fail in any operationally useful way to question either the assumptions upon which they operate or the relevance of their approach to children's needs.

The prescriptions are far more varied than the descriptive research. They range from recommendations for moderate reform within the system (Silberman) to abolition of the schools (Illich).

In general, however, the experiential literature agrees on the merits of educational systems that are less rigid, more responsive to individual diversity and more decentralized than the current system.

Limitations of Available Research

Education is an extremely complex and subtle phenomenon and one must bear in mind some of the limitations of research.

1. The data used by researchers are, at best, only coarse measures of what is really happening.

2. Educational outcomes are almost exclusively measured by cognitive achievement as determined by standardized achievement tests.

3. Few studies maintain adequate controls over what actually goes on in the classroom as it relates to achievement.

Despite these caveats we should not minimize the value of being able to predict academic success with some accuracy, and to continue to seek modes of teaching which will ensure that students can achieve a maximum of benefit from their school experience.

IMPLICATIONS

While we have given evidence in the above review of literature that non-school characteristics play an important role in school success, the focus of our concern as educators should be directed to assisting children in the school environment who are predicted as being likely to experience limited success.

In 1972 - 73, pupils in 16 North York Grade 1 classrooms participated in an experimental intervention program. Children who were likely to experience social and academic failure were identified by their kindergarten teacher's observations and standardized tests.

The intervention programs consisted essentially of the addition of volunteers in the classrooms. The volunteers were parents and some York University students who offered to assist in the schools on a regular basis. The volunteers assisted the teacher by engaging in such activities as listening or reading stories, phonics, word games, physical education and group discussions. Each teacher, with the assistance of the Principal, organized his or her own program.

The results of that study were very positive*. Both the identified children and their classmates grew in self concept, reading and arithmetic. Growth in self

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* Fram, I., Cassidy, P., Virgin, A.E. An Introductory Study of Intervention Programs Designed to Reduce the Risk of Failure of Selected Grade 1 Students. Educational Research Services. The Board of Education for the Borough of North York.

concept was measured by comparing post-test results with pre-test results. The size of the gain as measured by the Metro Achievement Test showed average gain in reading and far above average gain in numbers for the identified children. Thus the identified children gained ground on two of the measures and held their own on the third. By the same token their classmates had above average gain in reading and just about average gain in arithmetic.

The findings of the study were made available to all elementary schools in the borough through the Assistant Director of Education, and as a result some seventy-three schools indicated a desire to be involved during the present school year. Approximately 4,000 Grade 1 children have now been pre-tested with the same instruments as used last year and along with the kindergarten teachers' assessments we have been able to identify those children who would likely benefit from the extra assistance provided by volunteers. The volunteers used this year come from a number of sources. Many schools have obtained volunteer parents from their community, in addition York University has thus far provided some thirty-five students from various Psychology classes, and some schools are using senior citizens from nearby homes in the study. Several Secondary Schools have also provided senior students to elementary schools in their families.

In addition to the new schools, the seven schools that took part last year also wanted to be involved again this year, not only with their new Grade 1 pupils but also with their Grade 2 pupils who are thus being assisted for the second year.

A second intervention-type program, being conducted by The Ontario Institute for Studies in Education in co-operation with North York, involves teaching parents how to teach their children more effectively and thus improve their chances for school success.

The very existence of these two programs indicates that our educators are attempting to improve the chances for success for children in North York.

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Exhibit A

SCHOOL: _____

KINDERGARTEN TEACHERS' RATING SHEET

NAME OF STUDENT (please rank in order of over-all present achievement)	EXPECTED ACADEMIC AND READING ACHIEVEMENT IN GRADE 3 *	STUDENTS' READING SCORES ON A STANDARDIZED TEST (leave blank)	IF STUDENT IS EXPECTED TO REPEAT A YEAR PLEASE LIST THE REASONS

* A-Excellent; B-Good; C-Fair; D-Poor; E-Fail